

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
9 June 2005 (09.06.2005)

PCT

(10) International Publication Number
WO 2005/053356 A1

(51) International Patent Classification⁷: **H04R 17/00**,
5/02, H01L 41/09

Richard [GB/GB]; Clare House, 124 High Street, Mel-
dreth, Royston, Herts SG8 6BL (GB).

(21) International Application Number:
PCT/GB2004/004735

(74) Agents: **MERRYWEATHER, Colin, Henry et al.**; J.A.
Kemp & Co., 14 South Square, Gray's Inn, London WC1R
5JJ (GB).

(22) International Filing Date:
10 November 2004 (10.11.2004)

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0326721.8 17 November 2003 (17.11.2003) GB
0417277.1 3 August 2004 (03.08.2004) GB

(71) Applicant (*for all designated States except US*): 1...
LIMITED [GB/GB]; St John's Innovation Centre, Cowley
Road, Cambridge CB4 0WS (GB).

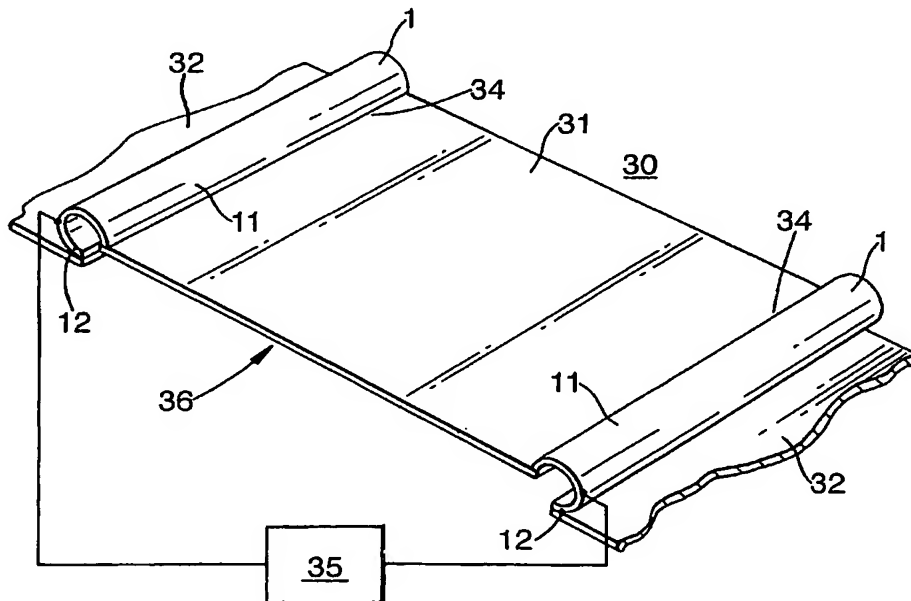
(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **TOPLISS, Richard**
[GB/GB]; 43 Bishops Road, Trumpington, Cambridge CB2
2NQ (GB). **HOOLEY, Anthony** [GB/GB]; 79 De Freville
Avenue, Cambridge CB4 1HP (GB). **SHEPHERD, Mark**,

[Continued on next page]

(54) Title: **LOUDSPEAKER**



(57) Abstract: A loudspeaker (30) comprises a sound generating element (31) mounted on a support structure (32), and two rotary actuators I mounted at opposing edges (34) of the sound generating element (31). The actuators (1) are operable to drive motion of the sound generating element (31) relative to the support structure (32) including a component of rotation. The loudspeaker (30) produces a greater sound output than if driven at one edge only, and is particularly suitable for use in a portable electronic device such as a mobile telephone, in which case the support structure (32) may be a portion of the casing of the, device and the sound generating element 31 maybe a transparent panel covering a display device (33).

WO 2005/053356 A1



SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*